

RADIAL FOREARM FLAP

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RADIAL FOREARM FLAP

FLAP TERRITORY

This flap consists of fasciocutaneous tissue from the volar surface of the distal forearm supplied by branches of the radial artery. It is most often designed as a free flap but may be pedicled e.g. distally for hand defects. The flap can be made 'sensate' by inclusion of either the medial or lateral cutaneous nerves of the forearm.

The flap is based on the axis of the radial artery. For larger flaps, care should be taken to ensure that the ulnar pedicle is not exposed. Instead the flap should extend over the radial border to the dorsum if necessary, although this will increase the sensory deficit.

VASCULAR ANATOMY

Septocutaneous perforators from the radial artery approach the skin between

the flexor carpi radialis (FCR) and brachioradialis (BR), with drainage through venae comitantes (VC) and/or cephalic vein. Over its length there are an average of 9-17 skin perforators that tend to be found in proximal and distal clusters. The diameter of the artery is around 2.5 mm. **Figure 1**

FLAP HARVEST

The patient should be placed in a supine position with the arm on a board positioned almost perpendicular to the body. The operation is often performed under tourniquet control and a preoperative Allen's test should be performed.

The axis of the flap lies just medial to the course of the radial artery at the wrist, approximately along a line connecting the centre of the antecubital fossa to the radial border of the wrist where the radial pulse

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is palpable, approximating to the course of the artery. **Figure 2**

The superficial veins are marked with the tourniquet tightened.

The skin incision should begin distally, usually from the ulnar aspect, and dissection proceeds subfascially taking care to preserve paratenon. Some surgeons dissect suprafascially first, changing to a deeper level in the proximity of the vessel (over the bellies of brachioradialis and FCR). **Figure 3**

The perforators lie in the 'septum' or connective tissue between the skin flap and artery, between the radial border of the flexor carpi radialis and the ulnar border of brachioradialis. The septum is approached from the radial side in a similar manner, preserving the cephalic vein for anastomosis when the VC are narrow in calibre.

Dividing and ligating the distal artery early makes the flap harvest easier. **Figure 4**

The pedicle is then traced proximally dissecting it free from the overlying brachioradialis. A lazy 'S' incision over the line of the artery may be used. In this dissection, use an incision over the radial border of the forearm. **Figure 5**

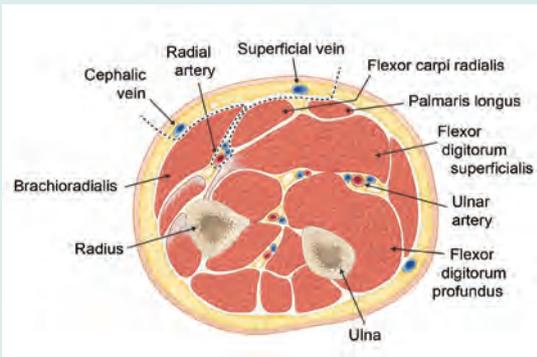


Figure 1

Cross section anatomy of the forearm

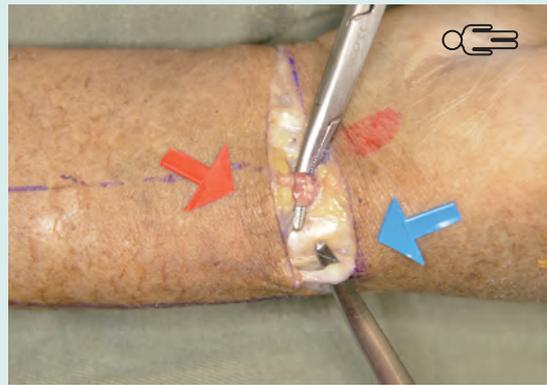


Figure 4

Radial artery (red)
Cephalic vein (blue)

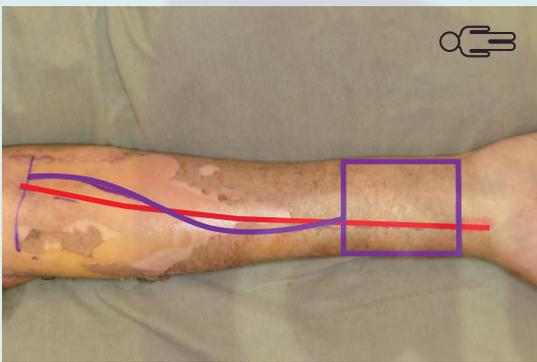


Figure 2

Course of radial artery (red) and flap design (purple)



Figure 5

Radial artery

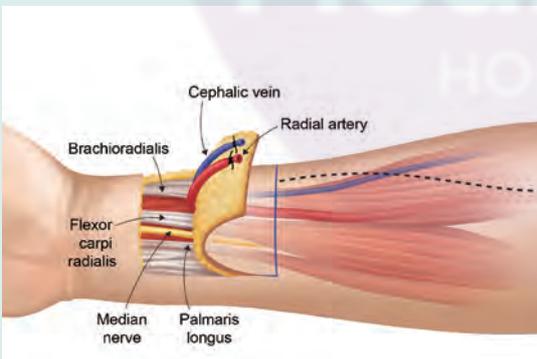


Figure 3

Distal radial artery and cephalic vein divided and the flap raised with preservation of paratenon

KEY POINTS

1. This flap consists of fasciocutaneous tissue supplied by branches of the radial artery.
2. Septocutaneous perforators from the radial artery approach the skin between the FCR and BR, and drain through venae comitantes or the cephalic vein.
3. A preoperative Allen's test should be performed.
4. The skin incision should begin distally and proceed subfascially taking care to preserve paratenon.
5. Dividing and ligating the distal artery early makes the flap easier to harvest.

